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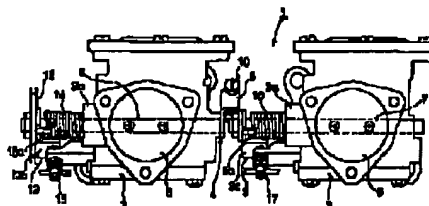
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**(54) SPRING RETURN TYPE MULTIPLE
CARBURETOR**

(57) Abstract:

PURPOSE: To reduce an opening difference between a driving side carburetor and a driven side carburetor as much as possible in a spring return type multiple carburetor.

CONSTITUTION: Spring force of a return spring 16 in a driven side carburetor 3 is set to be smaller than that of a return spring 14 in a driving side carburetor 2. As a load in rotating a throttle shaft 6 in the driven side carburetor 3 to an opening side is reduced, an elastic deformation quantity in the throttle shaft 6 in the driving side carburetor 2 or in an arm member in a throttle shaft connecting mechanism 4 is reduced.



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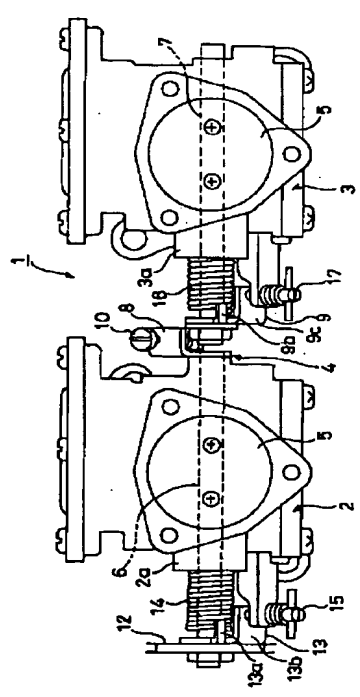
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(54)【発明の名称】 スプリング復帰式多連装型気化器

(57)【要約】

【目的】 スプリング復帰式多連装型気化器において駆動側気化器と従動側気化器の開度差を可及的に小さくする。

【構成】 従動側気化器3の復帰スプリング16のばね力を駆動側気化器2の復帰スプリング14より小さくした。従動側気化器3のスロットル軸6を開き側へ回すときの負荷が減少することから、駆動側気化器2のスロットル軸6やスロットル軸連結機構4のアーム部材の弾性変形量が減少する。



English Translation of

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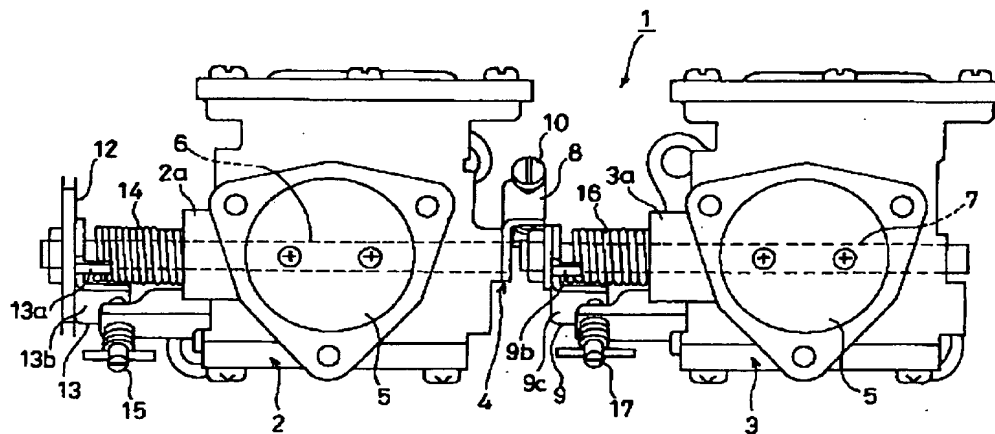
Inventor: NAKAMURA MITSUYOSHI

Applicant: SANSHIN IND CO LTD

[Abstract]

PURPOSE: To reduce an opening difference between a driving side carburetor and a driven side carburetor as much as possible in a spring return type multiple carburetor.

CONSTITUTION: Spring force of a return spring 16 in a driven side carburetor 3 is set to be smaller than that of a return spring 14 in a driving side carburetor 2. As a load in rotating a throttle shaft 6 in the driven side carburetor 3 to an opening side is reduced, an elastic deformation quantity in the throttle shaft 6 in the driving side carburetor 2 or in an arm member in a throttle shaft connecting mechanism 4 is reduced.



[Claim(s)]

[Claim 1] While driving force is transmitted to a follower side carburetor from the driving-side carburetor which two or more carburetors with which the throttle valve shaft was established according to the individual were connected through the throttle valve shaft linkage, and the lever for a drive fixed on the throttle valve shaft the spring return type equipped with the return spring which energizes a throttle valve shaft to a butterfly configuration throttle valve close side for every carburetor -- many -- cannons equipped at a battery -- the spring return type characterized by making the spring force of the return spring of a follower side carburetor smaller than the return spring of a driving-side carburetor in a mold carburetor -- many -- cannons equipped at a battery -- a mold carburetor.

[Detailed Description of the Invention]

[0001]

[Industrial Application] the spring return type to which this invention comes to connect two or more carburetors with which the throttle valve shaft and the return spring were prepared separately through a throttle valve shaft linkage -- many -- cannons equipped at a battery -- it is related with a mold carburetor.

[0002]

[Description of the Prior Art] the butterfly-valve type carburetor with which the throttle shaft was prepared separately was made to correspond to the number of gas columns as a carburetor used for the former, for example, an outboard motor, it arranged, and the throttle shaft of each carburetor was connected through the throttle shaft linkage -- many -- cannons equipped at a battery -- there is a thing of a mold. Said throttle shaft linkage has structure which connected the arm which fixed on one throttle shaft, and the arm which fixed on the throttle shaft of another side through the adjusting screw, and it was constituted so that spacing of both arms might be made to fluctuate and the opening in the close-by-pass-bulb-completely condition of both carburetors might be adjusted by the adjusting screw.

[0003] And the throttle lever had fixed on the throttle shaft of the carburetor located in the side-by-side installation direction end of these carburetors. It will be transmitted to the follower side carburetor with which the operating physical force from an operator is transmitted to the driving-side carburetor which has said throttle lever and which both adjoins this from this driving-side carburetor through a throttle shaft linkage, and a driving-side carburetor and a follower side carburetor come to open [namely,] in this direction and close to coincidence.

[0004] moreover -- this -- many -- cannons equipped at a battery -- it was equipped with the return spring which energizes a throttle valve to a close side for every carburetor in order to prevent that it becomes impossible for a mold carburetor to close a follower side carburetor when the driving force communicative function of a throttle shaft linkage is lost by a certain cause. This return spring consisted of a torsion coil spring shafted by the throttle shaft, and each carburetor was equipped with the abbreviation equal of the spring force. In addition, the return spring of a driving-side carburetor has been arranged near the throttle lever, and the return spring of a follower side carburetor is arranged near the throttle linkage.

[0005]

[Problem(s) to be Solved by the Invention] however, the spring return type constituted as mentioned above -- many -- cannons equipped at a battery -- a mold carburetor -- the opening at the time of a close by-pass bulb completely -- a driving-side carburetor and a follower side carburetor -- it is -- etc. -- even if it set up so that it might become, the opening of a throttle valve had the problem to spread

that the direction of a driving-side carburetor will become large. This was because the spring force of the return spring for follower side carburetors must be resisted and the arm of the throttle shaft of a driving-side carburetor or a throttle linkage must be turned, when opening a throttle valve.

[0006] Namely, since the return spring of a follower side carburetor is estranged from the throttle lever by one carburetor from the return spring of a driving-side carburetor, the throttle shaft of the driving-side carburetor located among both springs and the arm member of a throttle linkage will carry out elastic deformation of it in the direction of torsion slightly according to the spring force of the return spring of a follower side carburetor at the time of open actuation. Consequently, a difference will arise in angle of rotation of a throttle lever and the throttle shaft of a follower side carburetor, and the opening of a follower side carburetor will become smaller than a driving-side carburetor. If such a phenomenon arises from a close-by-pass-bulb-completely condition especially in the low opening region which the throttle valve opened slightly, combustion dispersion for every gas column will become large, and rotation of an engine will become unstable.

[0007] what was made in order that this invention might cancel such a trouble -- it is -- a spring return type -- many -- cannons equipped at a battery -- it aims at making it the opening difference of a driving-side carburetor and a follower side carburetor become small as much as possible in a mold carburetor.

[0008]

[Means for Solving the Problem] the spring return type concerning this invention -- many -- cannons equipped at a battery -- a mold carburetor makes the spring force of the return spring of a follower side carburetor smaller than the return spring of a driving-side carburetor.

[0009]

[Function] Since the loads when turning the throttle valve shaft of a follower side carburetor to a throttle valve aperture side decrease in number, the elastic deformation of the arm member of the throttle valve shaft of a driving-side carburetor or a throttle valve shaft linkage decreases.

[0010]

[Example] Hereafter, drawing 1 thru/or drawing 3 explain one example of this invention to a detail. the spring return type which drawing 1 requires for this invention -- many -- cannons equipped at a battery -- it is the top view of a mold carburetor, and this drawing is drawn where a carburetor is seen from the inhalation-of-air path upstream. Drawing 2 is the same and a front view and drawing 3 are drawings showing the engine side attachment section of a driving-side carburetor.

[0011] the spring return type according [on these drawings and / 1] to this example -- many -- cannons equipped at a battery -- it is a mold carburetor and this

carburetor is used for the two-cycle 2 cylinder engine for the Minakami transit ships. In addition, this carburetor 1 is attached in an engine so that the inhalation-of-air path of that interior may extend in the vertical direction. And this carburetor 1 is constituted by making it connect through the throttle shaft linkage 4, where the driving-side carburetor 2 prepared for every gas column and the follower side carburetor 3 are put in order.

[0012] Said driving-side carburetor 2 and the follower side carburetor 3 are the things of the float loess structure of a butterfly-valve mold, respectively, and the throttle shafts 6 and 7 which drive a valve element 5 are established according to the individual. These throttle shafts 6 and 7 extended in the direction which intersects perpendicularly with an inhalation-of-air path, and have penetrated the carburetor bodies 2a and 3a of each carburetor, and the return spring later mentioned in the axis end section projected from the 1 side (it sets to drawing and is left-hand side) of the carburetor bodies 2a and 3a is shafted.

[0013] The throttle shaft 6 of both the carburetors 2 and 3, and the throttle shaft linkage 4 which connects seven The drive arm 8 which fixed to the axis end by the side of the follower side carburetor 3 in the throttle shaft 6 for driving-side carburetors, The follower arm 9 which fixed to the axis end by the side of the driving-side carburetor 2 in the throttle shaft 7 for follower side carburetors, After the adjusting screw 10 by which the tip side thread part was screwed on said follower arm 9 while the head side thread part was inserted in said drive arm 8, and this adjusting screw 10 have penetrated, it consists of both arms 8 and a compression coil spring 11 attached elastically among nine.

[0014] That is, since both the arms 8 and 9 are connected by the adjusting screw 10 by which locking was carried out with the compression coil spring 11 according to this throttle shaft linkage 4, the throttle shaft 7 of the follower side carburetor 3 comes to be interlocked with the throttle shaft 6 of the follower side carburetor 2. Moreover, the opening of the follower side carburetor 3 to the driving-side carburetor 2 can be finely tuned by changing the amount of bell and spigots of an adjusting screw 10, and making spacing between both the arms 8 and 9 fluctuate.

[0015] In addition, said follower arm 9 was formed by carrying out bending of the sheet-metal material, and connection section 9a on which said adjusting screw 10 is screwed from the base which fixes on the throttle shaft 7, claw part 9b which the return spring mentioned later contacts, and the closed-position adjusting screw mentioned later and stopper section 9c which counters have stood up, respectively.

[0016] While a throttle lever 12 fixes the throttle shaft 6 of the driving-side carburetor 2 to an axis end at the axis end section which projects from the 1 side of the opposite side in the follower side carburetor 3 in carburetor body 2a, this throttle lever 12 is adjoined and the stopper lever 13 and the return spring 14 are shafted by this order. Said throttle lever 12 is connected with an accelerator lever

through the throttle wire which is not illustrated, and it is constituted so that it may rotate by actuation of an operator. When opening a valve element 5, this throttle lever 12 is turned so that the upper limit section in drawing 1 may move to a near side to the space of drawing 1. In addition, drawing 1 shows the close-by-pass-bulb-completely condition.

[0017] Said stopper lever 13 was formed by carrying out bending of the sheet-metal material, and claw part 13a for return springs and stopper section 13b have stood up from the base which fixes on the throttle shaft 6. Said claw part 13a has the structure where the end of the return spring 14 contacts, and said stopper section 13b has a tip of the closed-position adjusting screw 15 mentioned later, and structure which counters.

[0018] It twists and consists of a coil spring, and said return spring 14 is constituted so that rotation energization may be carried out in the direction which was shafted by the throttle shaft 6 and where the other end is contacted by claw part 13a of said stopper lever 13, and a valve element 5 closes the throttle shaft 6, while an end is stopped by carburetor body 2a.

[0019] Said closed-position adjusting screw 15 is screwed in carburetor body 2a, and by changing the amount of bell and spigots and making stopper section 13b of said stopper lever 13, and the amount of protrusions of the point which counters fluctuate, it is constituted so that the close side rotation location of the stopper lever 13 (throttle shaft 6) may be regulated.

[0020] On the other hand, the return spring 16 for the throttle shaft 7 of the follower side carburetor 3 to carry out rotation energization of this throttle shaft 7 to a close side at the axis end section by the side of said throttle shaft linkage 4 is shafted. This return spring 16 is also twisted and it consists of a coil spring, and the other end is contacted by claw part 9b of said follower arm 9 while an end is stopped by carburetor body 3a. In addition, stopper section 9c of this follower arm 9 has a tip of the closed-position adjusting screw 17 screwed in carburetor body 3a, and structure which counters. That is, the close side rotation location of the throttle shaft 7 is controllable by changing the amount of bell and spigots of this closed-position adjusting screw 17.

[0021] And as for the return spring 16 of the follower side carburetor 3, what has the spring force smaller than the return spring 14 of the driving-side carburetor 2 is used.

[0022] It is the flange for attaching in the engine which is not illustrating both the carburetors 2 and 3 which is shown with signs 21 and 22 in drawing 2 and drawing 3. These flanges 21 and 22 are being fixed with the bolt 23 with a hexagon socket screwed on engine side connection section 2b of the carburetor bodies 2a and 3a, and 2c from an engine side. This bolt 23 with a hexagon socket is positioned in the location which sees from the downstream of an inhalation-of-air path, and laps with

the throttle shafts 6 and 7 exactly as shown in drawing 3 .

[0023] And these flanges 21 and 22 have extended from said engine side connection section 2b and 2c to the side, and the bore 24 in which the securing bolt (not shown) which fixes these flanges 21 and 22 to an engine at this extension section is inserted is drilled. The drilling location of this bore 24 is positioned so that it may estrange in the direction which intersects perpendicularly with the shaft orientations of the throttle shafts 6 and 7 to said bolt 23 with 6 angle holes in flanges 21 and 22. In addition, in the flange 24 for driving-side carburetors shown in drawing 3 , the flange 22 attached in the follower side carburetor 3 is formed so that it may become bilateral symmetry.

[0024] If both the carburetors 2 and 3 are attached in an engine using these flanges 21 and 22, since the throttle shafts 6 and 7 will not interfere in a tool in binding a securing bolt tight, a carburetor can be detached and attached very easily. In addition, if these flanges 21 and 22 are not used, since a securing bolt must be made to insert in the location of engine side connection section 2b and the bolt 23 with a hexagon socket in 2c, when binding this tight, the throttle shafts 6 and 7 will interfere in a tool. And a special tool etc. must be used if needed.

[0025] next, the spring return type constituted as mentioned above -- many -- cannons equipped at a battery -- actuation of the mold carburetor 1 is explained. In enlarging throttle opening from the close-by-pass-bulb-completely condition which showed this carburetor 1 to drawing 1 , the spring force of the return springs 14 and 16 is resisted, and the throttle lever 12 prepared in the side-by-side installation direction end of carburetors 2 and 3 is turned by the accelerator lever (not shown), and is performed. That is, while driving force is transmitted to the throttle shaft 6 of the driving-side carburetor 2 from a throttle lever 12, it is transmitted to the throttle shaft 7 of the follower side carburetor 3 through the throttle shaft linkage 4 from this throttle shaft 6, and both the carburetors 2 and 3 interlock.

[0026] Since the load for the spring force of the return spring 16 of the follower side carburetor 3 to turn the throttle shaft 7 for follower side carburetors smaller than the return spring 14 of the driving-side carburetor 2 is small at this time, and there are little drive of the throttle shaft 6 for driving-side carburetors and the throttle shaft linkage 4 and elastic deformation of the follower arms 8 and 9 and they end, the angular difference of both the throttle shafts 6 and 7 becomes very small. That is, the opening difference of the driving-side carburetor 2 and the follower side carburetor 3 becomes small as much as possible.

[0027] And in an accelerator lever, if it returns from an open position to a closed position, relation to the throttle shafts 6 and 7 with which driving force stops joining a throttle lever 12 will be returned with the return springs 14 and 16 until the stopper lever 13 and the follower arm 9 contact the closed-position adjusting screws 15 and 17, respectively.

[0028] therefore, the spring return type shown by this example -- many -- cannons equipped at a battery -- in the mold carburetor 1, the spring force of the return spring 16 for follower side carburetors is written smaller than the return spring 14 of the driving-side carburetor 2, the elastic deformation of the arm parts of the throttle shaft 6 for driving-side carburetors or the throttle shaft linkage 4 decreases, and the opening difference of two carburetors 2 and 3 can be made small as much as possible.

[0029] In addition, although this example showed the example which connected two carburetors, the quantity of a carburetor may be more than this. Thus, in constituting, it makes the spring force of the return spring of all the carburetors by the side of a follower smaller than the return spring of the driving-side carburetor with which the throttle lever was prepared. Moreover, when a carburetor is three or more pieces, the spring force of the return spring of a follower side carburetor may give a difference to the spring force so that it may become so small that it separates from a driving-side carburetor.

[0030] Moreover, although it twisted as a return spring and the coil spring was adopted in this example, a tension coil spring can also be used as this return spring. Thus, when it constitutes, a tension coil spring is made to lay between the stopper lever 13, the follower arm 9, and the carburetor bodies 2a and 3a. Furthermore, although this example showed the example which applied this invention to the return spring to which a throttle valve is returned, the same effectiveness is acquired even if the target return spring is for air shutters.

[0031]

[Effect of the Invention] the spring return type which starts this invention as explained above -- many -- cannons equipped at a battery -- a mold carburetor writes smaller than the return spring of a driving-side carburetor the spring force of the return spring of a follower side carburetor, and since the loads when turning the throttle valve shaft of a follower side carburetor to a throttle valve aperture side decrease in number, the elastic deformation of the throttle valve shaft of a driving-side carburetor or a throttle valve shaft linkage decreases.

[0032] For this reason, the angular difference of the throttle valve shaft of a driving-side carburetor and the throttle valve shaft of a follower side carburetor becomes small, and can make the opening difference of both carburetors small as much as possible.

[Brief Description of the Drawings]

[Drawing 1] the spring return type concerning this invention -- many -- cannons equipped at a battery -- it is the top view of a mold carburetor.

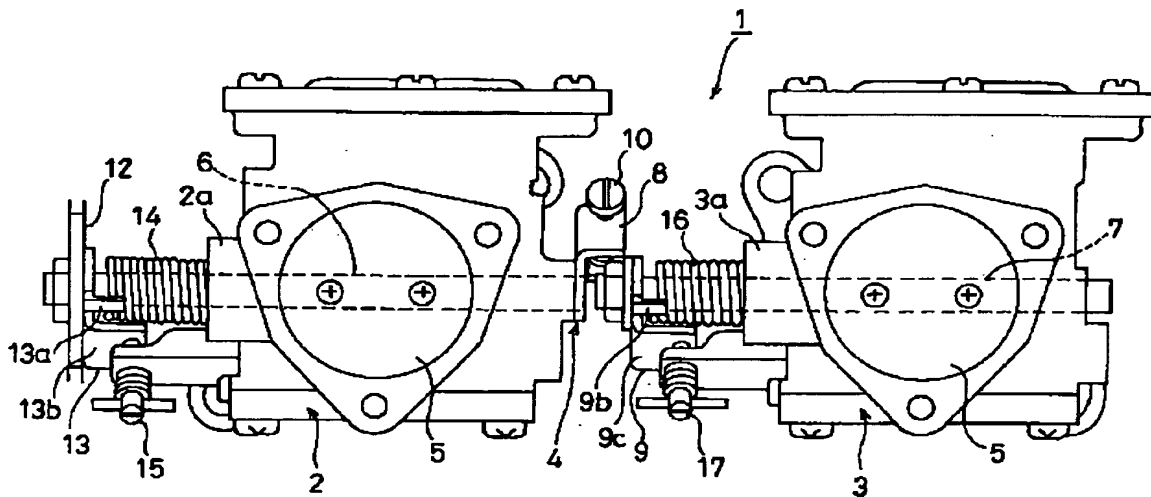
[Drawing 2] the spring return type concerning this invention -- many -- cannons equipped at a battery -- it is the front view of a mold carburetor.

[Drawing 3] It is drawing showing the engine side attachment section of a driving-side carburetor.

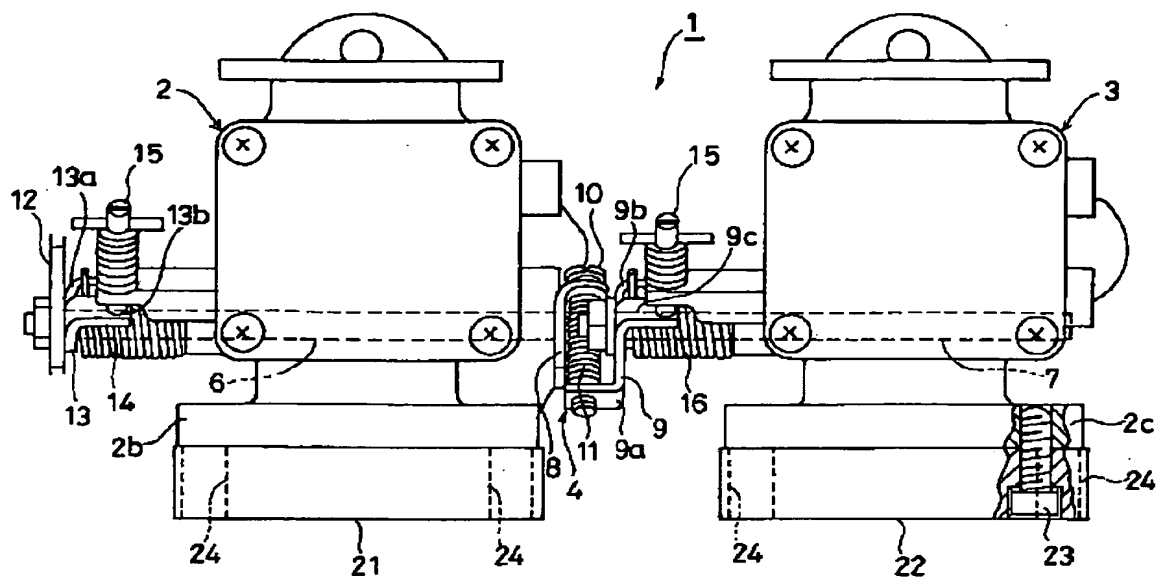
[Description of Notations]

1 -- spring return type -- many -- cannons equipped at a battery -- a mold carburetor and 2 -- a driving-side carburetor, 3 -- follower side carburetor, 4 -- throttle shaft linkage, and 5 -- a valve element, 6, 7 -- throttle shaft, 8 -- drive arm, and 9 -- a follower arm, 12 -- throttle lever, 14, and 16 -- return spring.

[Drawing 1]



[Drawing 2]



[Drawing 3]

